

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

09/831415

INTERNATIONAL APPLICATION NO.
PCT/DE99/03493INTERNATIONAL FILING DATE
2 November 1999PRIORITY DATE CLAIMED
10 November 1998

TITLE OF INVENTION

**ELECTRICAL COMPONENTS FOR PRINTED BOARDS AND METHOD FOR AUTOMATICALLY
INSERTING SAID COMPONENTS IN PRINTED BOARDS**

APPLICANT(S) FOR DO/EO/US

Reginald Leeman, Bernard Houteman, Georges Embo, and Edgard Acke

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
 - a. is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. has been transmitted by the International Bureau.
 - c. is not required, as the application was filed in the United States Receiving Office (RO/US).
6. A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. A copy of the International Search Report (PCT/ISA/210).
8. Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. have been transmitted by the International Bureau.
 - c. have not been made; however, the time limit for making such amendments has NOT expired.
 - d. have not been made and will not be made.
9. A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
10. An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)). **unsigned**
11. A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

Items 13 to 20 below concern document(s) or information included:

13. An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. A **FIRST** preliminary amendment.
16. A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. A substitute specification.
18. A change of power of attorney and/or address letter.
19. Certificate of Mailing by Express Mail
20. Other items or information:

**Return Postcard, A copy of the Notification to the International Bureau concerning a change of Applicant;
Check No. 15069 in the amount of \$860.00**

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 09/831415	INTERNATIONAL APPLICATION NO. PCT/DE99/03493	ATTORNEY'S DOCKET NUMBER KSN0013
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21. The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

<input type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2) paid to USPTO and International Search Report not prepared by the EPO or JPO	\$1,000.00
<input checked="" type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO	\$860.00
<input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO	\$710.00
<input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4)	\$690.00
<input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4)	\$100.00

ENTER APPROPRIATE BASIC FEE AMOUNT =

\$860.00

Surcharge of **\$130.00** for furnishing the oath or declaration later than 20 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).

\$0.00

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	
Total claims	9 - 20 =	0	x \$18.00	\$0.00
Independent claims	2 - 3 =	0	x \$80.00	\$0.00

Multiple Dependent Claims (check if applicable).

TOTAL OF ABOVE CALCULATIONS = **\$860.00**

Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) (check if applicable).

\$0.00

SUBTOTAL = **\$860.00**

Processing fee of **\$130.00** for furnishing the English translation later than 20 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).

\$0.00

TOTAL NATIONAL FEE = **\$860.00**

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable).

\$0.00

TOTAL FEES ENCLOSED = **\$860.00**

Amount to be: refunded	\$
charged	\$

A check in the amount of **\$860.00** to cover the above fees is enclosed.

Please charge my Deposit Account No. **02-0387** in the amount of **\$860.00** to cover the above fees. A duplicate copy of this sheet is enclosed.

The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **02-0387** A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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South Bend, IN 46601

Tel. (219)234-4149
Fax. (219)239-1900



SIGNATURE

Eric J. Groen

NAME

32,230

REGISTRATION NUMBER

May 9, 2001

DATE

09/831415

JC08 Rec'd PCT/PTO 09 MAY 2001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:)
Reginald Leeman, Bernard Houteman,)
Georges Embo, and Edgard Acke)
)
Filed: PCT/DE99/03493 November 2, 1999)
)
For: ELECTRICAL COMPONENTS FOR)
PRINTED BOARDS AND METHOD FOR)
AUTOMATICALLY INSERTING SAID)
COMPONENTS IN PRINTED BOARDS)

Commissioner for Patents and Trademarks
Washington DC 20231

Dear Sir:

PRELIMINARY AMENDMENT

In the above-mentioned PCT application, please accept the enclosed application under the national stage pursuant to 35 USC § 371 and amend the application as follows:

In the Specification:

On Page 4, line 135, replace the paragraph with the following paragraph.

The housing 1, which may also be a metal housing, in the instant case consists of metallized plastics material. On the mating plug side 2 thereof, it has four coaxial sockets 3 in a row and column arrangement. The layer thickness of the metallization of housing 1 is at least equal to the depth of penetration of the electromagnetic waves to be transmitted via the circuit board component.

In the Claims:

Please replace claims 1-9 of the application with claims 1-9 as follows:

1. An electrical component for circuit board mounting, comprising a connector housing and surface mount solder connections provided on the bottom side of said housing for interconnection of the housing to the circuit board by way of solder joints between solder connections assigned thereto on the circuit board, the housing further comprising a plurality of solderable bolt pins on the bottom side of the housing for additionally securing the housing to the circuit board, said bolt pins being profiled for engagement in continuous plated bolt holes assigned thereto on the circuit board and are soldered in said bolt holes.
2. An electric circuit board component according to claim 1, wherein the solder joints between the housing-side bolt pins and the bolt holes in the circuit board are in the form of surface mount solder joints.
3. An electric circuit board component according to claim 1, wherein the housing, inclusive of the bolt pins thereof, consists of plastic material, and in that at least the bolt pins are provided with a solderable metallization.
4. An electric circuit board component according to claim 3, wherein the metallized bolt pins are at reference potential.
5. An electric circuit board component according to claim 1, wherein the cross-sectional area of the bolt pins is selected to be considerably larger than the cross-sectional area of solder pins made of thin wires, as usually employed with such components.
6. An electric circuit board component according to claim 5, wherein the cross-sectional area of the bolt pins, in consideration of the number and material thereof, is selected to be so large that the mechanical load carrying capacity of the secured state of the housing on the circuit board sufficiently fulfills the requirements to be met thereby.

7. An electric circuit board component according to claim 1, wherein the bolt pins projecting beyond the bottom side of housing constitute lugs preferably integrally formed on the lower edge of housing on the outsides of side walls and back wall thereof.

8. An electric circuit board component according to claim 1, wherein the plated inner wall of the bolt holes in the circuit board is of slightly conical design, and that the thus-designed bolt holes have their largest inside width on the side of circuit board where the housing-side bolt pins engage in the bolt holes.

9. A method of automatically providing circuit boards with electric circuit board components, where the components include a component housing and surface mount solder connections provided on the bottom side of said housing for interconnection of the housing to the circuit board, and a plurality of solderable bolt pins on the bottom side of the housing for additionally securing the housing to the circuit board, the method comprising the steps of:

 providing all solder connections and all bolt holes on the circuit board with a layer of soldering paste;

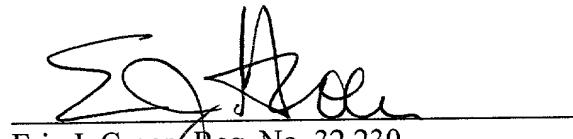
 picking up the housing by an automatic pick and place machine and applying the housing to the circuit board exploiting the centering possibilities established by the bolt pins on the housing and the bolt holes in the circuit board; and

 passing the circuit board along with the housing applied thereto through an SMD soldering furnace in which, in one operation, the housing-side SMD solder connections of the contacting feet are firmly soldered to the solder connections assigned thereto on the circuit board on the one hand, and the bolt pins on the housing are firmly soldered to the bolt holes assigned thereto on the circuit board on the other hand.

REMARKS

Applicants respectfully request that the above preliminary amendment be entered, and that the fees due herewith are calculated using the new claims, not the claims of the PCT application.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

135 The housing 1, which may also be a metal housing, in the instant case consists of metallized plastics material. On the mating plug side 2 thereof, it has four coaxial sockets 3 in a row ~~an~~ and column arrangement. The layer thickness of the metallization of housing 1 is at least 140 equal to the depth of penetration of the electromagnetic waves to be transmitted via the circuit board component.

Specification

5 Electric Circuit Board Component and Method of Automatically Providing Circuit Boards with such Components

The invention relates to an electric circuit board component, in particular an RF coaxial connector, in which
10 the housing of the component is secured on the circuit board by way of solder joints between the SMD solder
connections provided on the bottom side of said housing and solder connections assigned thereto on the circuit
board.

15 Electric circuit board components, in particular RF coaxial connectors, are frequently employed in electric
transmission and connection means. Basically, there are
20 employed three different connection types for the electrical connection between the mutually associated terminals on the side of the component and on the side of the circuit board.

In the connection type - first connection type - as employed e.g. in the connector known from document EP 0
25 582 960 A1, there are used pressing pins, whereby a soldering operation can be dispensed with. However, the utilization of such relatively voluminous pressing pins presupposes that the number thereof per component be
30 limited in consideration of the as small as possible dimensions of such components. However, the number thereof per component is also limited considerably in that the pressing force to be applied in urging the pressing pins on the component side into the associated plated connecting holes on the circuit board side must not exceed
35 a value given by the strength of the component. For, the pressing force to be applied is proportional to the num-

ber of pressing pins provided. The automatic provision of circuit boards with such components requires very expensive devices.

In the connection type - second connection type - as employed for example with the connector known from document EP 0 488 482 A1, the terminals consist of solder pins made of thin wires. Such solder pins may also be employed in relatively large numbers for components of quite small dimensions. However, such connectors upon mounting thereof must be applied manually to the circuit board, as it is difficult to introduce the thin solder pins into their associated connecting holes in the circuit board. Upon application of such connectors on the circuit board, soldering of the solder pins in their associated connecting holes in the circuit board takes place by flow soldering.

In case of the connection type - third connection type - as utilized e.g. for the connector known from document DE 197 16 139 C1, so-called SMD (surface mounted device) solder connections are employed for establishing the electrical connections between component and circuit board. The provision of the circuit boards with components having SMD solder connections, in contrast to those having pressing pins or solder pins, has the great advantage that it can be carried out simply and rapidly by means of automatic "pick & place" machines. The disadvantage thereof is the low anchoring strength of the component on the circuit board established by these soldering joints. For this reason, the component must be additionally secured to the circuit board by means of bolts or rivets, so as to prevent damaging or even tearing off of the SMD solder joints due to occasionally unavoidable higher mechanical loads.

75 It is the object of the invention to indicate a further solution for sufficiently securing electric components having SMD solder connections to circuit boards, which does not require screws or rivets and is particularly simple in terms of production technology.

80 According to the invention, this object is met for such an electric circuit board component in that the housing, for additionally securing the same to the circuit board, has on the bottom side thereof a plurality of solderable bolt pins which engage in continuous plated bolt holes
85 assigned thereto on the circuit board and are soldered in said bolt holes.

90 The invention is based on the finding that the loading of circuit boards with the aid of automatic pick & place machines is also possible if the component has solder-pin-like connecting elements which are soldered in the circuit board in associated continuous plated holes. The sole prerequisite in this regard is that their cross-sectional area is sufficiently large to allow utilization
95 thereof as centering means by the automatic pick & place machines upon application of the component to the circuit board.

100 Expedient developments of the subject matter according to claim 1 are indicated in the additional claims 2 to 8.

105 A further development is indicated in claims 9 and 10 in the form of method of automatically providing circuit boards with circuit board components making use of the invention, with said method being particularly advantageous in terms of time and costs.

110 The invention will be elucidated in more detail herein-
after by way of an embodiment shown in the drawings
wherein

115 Fig. 1 shows a perspective view of an embodiment in the
form of an RF angular connector,

120 Fig. 2 shows a schematic view of the anchoring of bolt
pins on the housing in bolt holes in the circuit
board according to a first embodiment,

125 Fig. 3 shows a schematic view of the anchoring of bolt
pins on the housing in bolt holes in the circuit
board according to a second embodiment.

130 The first embodiment of an electric circuit board compo-
nent illustrated in Fig. 1 is an RF angular connector.
The basic structure thereof corresponds to the connector
already known from the initially indicated document DE
197 16 139 C1. For this reason, it should be sufficient
to deal with the structure of the constructional shape
of this first embodiment only in so far as it is neces-
sary for the understanding of the invention and, as for
the rest, to make reference to the document mentioned as
regards closer details thereof.

135 The housing 1, which may also be a metal housing, in the
instant case consists of metallized plastics material.
On the mating plug side 2 thereof, it has four coaxial
sockets 3 in a row an column arrangement. The layer
thickness of the metallization of housing 1 is at least
140 equal to the depth of penetration of the electromagnetic
waves to be transmitted via the circuit board component.

145 Housing 1 has contacting feet 4 and 5, of which contact-
ing feet 4 are arranged in a multiplicity on the outside
of housing 1 near the bottom side 6 thereof. Contacting

feet 4 have abutting areas designed as tinnable SMD solder terminals. Contacting feet 5 also are SMD solder terminals and consist of the ends of the metallic inner conductors exiting from the bottom side 6 and bent parallel to the latter. The contacting feet 4 and 5 serve for electrical connection of their SMD solder terminals to the associated solder terminals on circuit board 7 shown only schematically in Fig. 1 in broken lines.

155 The contacting feet 4 are provided in larger numbers on the outside of the side walls 8 and 9 and the back wall 10 of housing 1 and each have a comb-like structure. They have a shape of the kind of supporting webs and each slightly project with their SMD terminals beyond the bottom side 6 of housing 1. The same applies analogously to the contacting feet 5 of the inner conductor ends. Additional contacting feet 4 are provided at the edge of bottom side 6 on the mating plug side 2.

160 165 The arrangement of the contacting feet 4 and 5 on the outside of side walls 8 and 9 and back wall 10 as well as along the edge on bottom side 6 on the mating plug side 2 is important for soldering the SMD solder terminals or connections thereof to circuit board 7, since the circulating heat used in soldering can thus be fed well to the SMD solder terminals. In addition thereto, it is easily possible afterwards to inspect whether the solder joints are perfect. To ensure perfect solder joints for all SMD solder terminals upon connection of housing 1 to circuit board 7, it is advisable to provide for a planarity tolerance of < 0.1 mm between all SMD terminals of the contacting feet 4 and 5.

170 175 180 The number of the entirety of contacting feet 4 provided, the SMD solder connections of which are electrically connected to the metallization of housing 1, is selected to be as large as possible in order to ensure

as good as possible fixing of housing 1 on circuit board 7 after the SMD solder joints have been established. As
185 shown in practical application, the fixing of the housing attainable by SMD solder joints, however, is poor also with a larger number of SMD solder joints, so that the mechanical load capacity to be demanded for such fixing cannot be ensured to a sufficient extent.

190 For sufficient mechanical securing of housing 1 on circuit board 7, there are provided several solderable bolt pins 11, as shown in Fig. 1, between contacting feet 4 as well as on the outsides of side walls 8 and 9 and
195 back wall 10 and on the edge of bottom side 6 on the mating plug side 2; these bolt pins 11 project beyond contacting feet 4 and 5 and, upon application to circuit board 7, engage in associated contact-establishing or plated bolt holes 12 in circuit board 7 in which they
200 are soldered. Like housing 1, the bolt pins 11 consist of plastics material. Like the contacting feet 4, they are formed on the housing walls in the manner of supporting webs and are metallized.

205 Soldering of the bolt pins 11 of the housing in the plated bolt holes 12 in the circuit board, as in case of soldering solder pins, can be effected by flow soldering in which circuit board 7 is passed with the bottom side 14 thereof across a flow soldering bath, with
210 the housing 1 being arranged on the top side 13 of said circuit board. Thus, in this case it is necessary to carry out two soldering operations when circuit board 7 is provided with a housing 1.

215 A first soldering operation is necessary for establishing the electrical connections between the SMD solder terminals of contacting feet 4 and 5 of the housing and the solder terminals assigned thereto on circuit board 7. In this process, circuit board 7 having housing 1 ar-

220 ranged thereon is passed through an SMD soldering furnace. Thereafter, a second soldering operation has to be carried out using a flow soldering bath for soldering the bolt pins 11 of the housing to their associated plated bolt holes 12 in the circuit board. However, soldering of the bolt pins 11 on the housing in the associated plated bolt holes 12 in the circuit board may also be carried out in particularly advantageous manner in accordance with the SMD soldering method, so that only one soldering operation has to be carried out in securing a housing 1 to circuit board 7. This fact shall be dealt with in more detail hereinafter with reference to Figs. 2 and 3.

235 Figs. 2 and 3 schematically illustrate the course of the SMD soldering operation. Each of Figs. 2 and 3 shows a housing 1 arranged on circuit board 7. Each of the housings 1 is shown with two bolt pins 11 only, one thereof being integrally formed on the left-hand side wall 8 and the other one thereof being integrally formed on the 240 right-hand side wall 9. Both bolt pins 11 engage in their associated bolt holes 12 in circuit board 7. The central vertical subdivision of housing 1 and circuit board 7 into left-hand and right-hand halves is supposed to indicate the SMD soldering operation. The plated bolt hole 12 in the circuit board, along with the bolt pin 11 of the housing engaging therein, in the left-hand half illustrates the condition prior to passage of the circuit board 7 along with the housing 1 arranged thereon through the SMD soldering furnace, whereas the right-hand half illustrates the condition after passage thereof through the SMD soldering furnace.

255 Before application of housing 1 to circuit board 7, all soldering connections or areas on the top side 13 of circuit board 7 must be provided with a soldering paste layer. To this end, a soldering paste mask is employed.

In the region of the bolt holes 12, soldering paste 15 is applied across the same. Upon passage through the SMD soldering furnace, the soldering paste has flown into the cavity between bolt pin 11 and the plated wall of bolt hole 12, as can be seen well in the right-hand half of Figs. 2 and 3 each, whereby bolt pin 11 is firmly soldered in the bolt hole.

The difference between Figs. 2 and 3 resides merely in the shape of the bolt holes 12. While the plated inner wall 15 of bolt holes 12 in Fig. 2 is of vertical design, the plated inner wall 17 of bolt holes 12 in Fig. 3 is of slightly conical design. This design may make sense occasionally to prevent that the liquified soldering paste 15, upon passage of the circuit board 7 through the SMD soldering furnace, partly drips down from the bottom side 14 of circuit board 7. However, with a vertical inner wall 16, this can be prevented in general by way of a suitable, mutually matched dimensioning of bolt pin and bolt hole diameter, even if bolt pins 11 are slightly conically tapering towards the free end thereof. In the embodiment depicted in the drawings, the dimensions provided for, with a thickness S of the circuit board 7 of 1.6 mm, were as follows:

bolt hole diameter D = 2.3 mm

bolt pin diameter d = 1.8 mm

bolt pin length L = 2.2 mm

Claims

1. An electric circuit board component, in particular an RF coaxial connector, in which the housing (1) of the component is secured on the circuit board (7) by way of solder joints between SMD solder connections provided on the bottom side (6) of said housing and solder connections assigned thereto on the circuit board,
290
characterized in that the housing (1), for additionally securing the same to the circuit board (7), has on the bottom side (6) thereof a plurality of solderable bolt pins (11) which engage in continuous plated bolt holes (12) assigned thereto on the circuit board (7) and are soldered in said bolt holes.
295
300
2. An electric circuit board component according to claim 1,
characterized in that the solder joints between the housing-side bolt pins (11) and the bolt holes (12) in the circuit board are in the form of SMD solder joints.
305
3. An electric circuit board component according to claim 1 or 2,
characterized in that the housing (1), inclusive of the bolt pins (11) thereof, consists of plastics material, and in that at least the bolt pins (11) are provided with a solderable metallization.
310
315
4. An electric circuit board component according to claim 3,
characterized in that the metallized bolt pins (11) are at reference potential.
320

5. An electric circuit board component according to any of the preceding claims,
characterized in that the cross-sectional area of the bolt pins (11) is selected to be considerably larger
325 than the cross-sectional area of solder pins made of thin wires, as usually employed with such components.

6. An electric circuit board component according to claim 5,
330 characterized in that the cross-sectional area of the bolt pins (11), in consideration of the number and material thereof, is selected to be so large that the mechanical load carrying capacity of the secured state of the housing (1) on the circuit board (7) sufficiently fulfills the requirements to be met thereby.

7. An electric circuit board component according to any of the preceding claims,
340 characterized in that the bolt pins (11) projecting beyond the bottom side (6) of housing (1) constitute lugs preferably integrally formed on the lower edge of housing (1) on the outsides of side walls (8, 9) and back wall (10) thereof.

345 8. An electric circuit board component according to any of the preceding claims,
characterized in that the plated inner wall (17) of the bolt holes (12) in the circuit board is of slightly conical design, and that the thus designed bolt holes (12) have their largest inside width on the side of circuit board (7) where the housing-side bolt pins (11) engage in the bolt holes (12).

355 9. A method of automatically providing circuit boards with electric circuit board components according to claim 1,

characterized in that
360 in a first step, with the aid of a soldering paste,
all solder connections and all bolt holes (12) on the
circuit board (11) are provided with a layer of sol-
dering paste (15),
365 in a second step, the housing (1) is taken up by an
automatic pick & place machine and is applied to the
circuit board (7) exploiting the centering possibili-
ties established by the bolt pins (11) on the housing
and the bolt holes (12) in the circuit board, and
370 in a third step, the circuit board (7) along with the
housing (1) applied thereto is passed through an SMD
soldering furnace in which, in one operation, the
housing-side SMD solder connections of the contacting
feet (4, 5) are firmly soldered to the solder connec-
tions assigned thereto on the circuit board on the
one hand, and the bolt pins (11) on the housing are
375 firmly soldered to the bolt holes (12) assigned
thereto on the circuit board on the other hand.

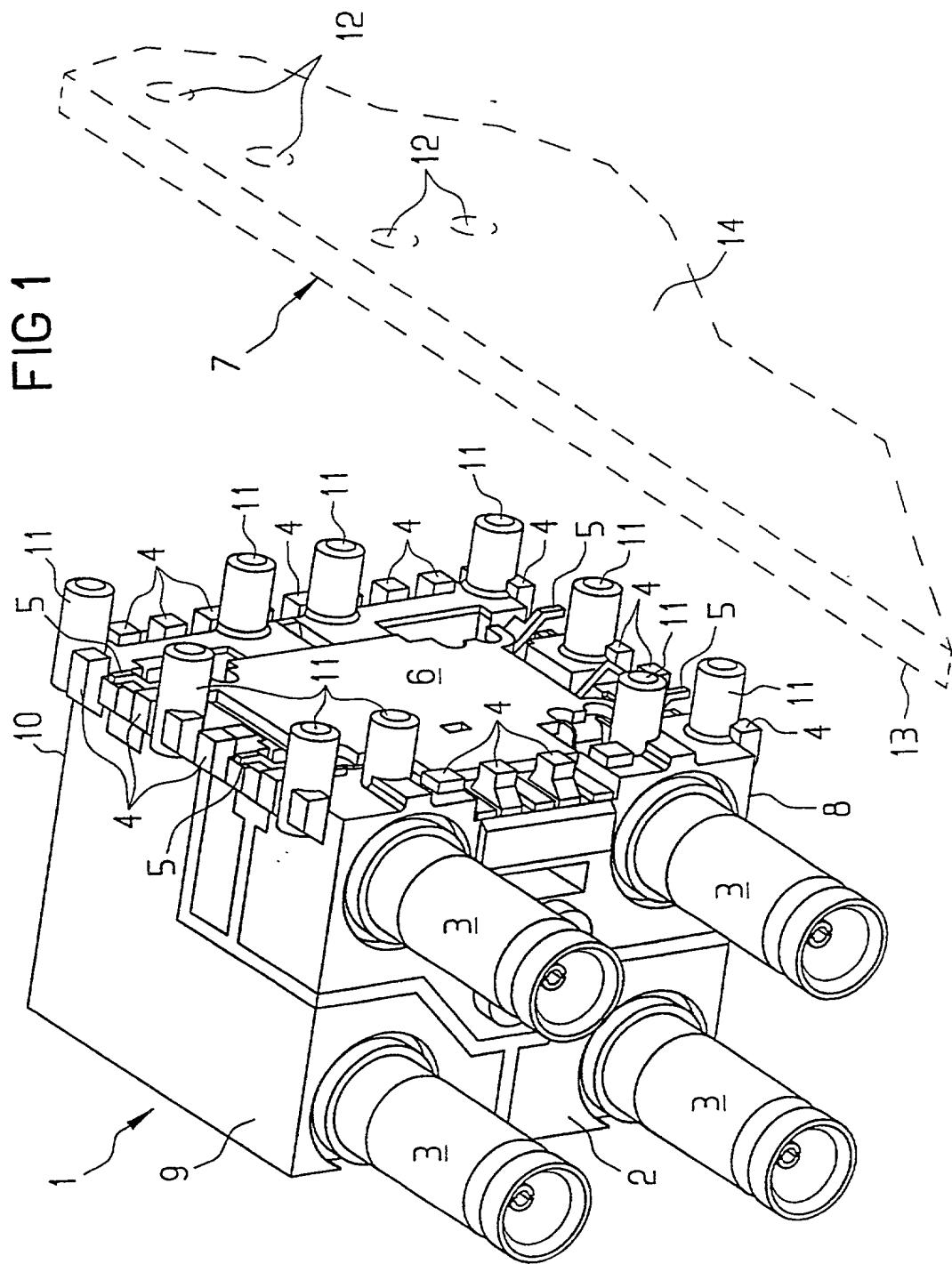
Abstract

380 Electric Circuit Board Component and Method of Automatically Providing Circuit Boards with such Components

An electric circuit board component, in particular a RF coaxial connector, in which the housing (1) of the component is fixed on the circuit board (7) by way of solder joints between the SMD solder connections provided on the bottom side (6) of said housing and solder connections assigned thereto on the side of the circuit board, and in which the housing (1), for additionally securing the same to the circuit board (7), has on the bottom side (6) thereof a plurality of solderable bolt pins (11) which engage in continuous plated bolt holes (12) assigned thereto on the circuit board (7) and are soldered in said bolt holes.

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FIG 2

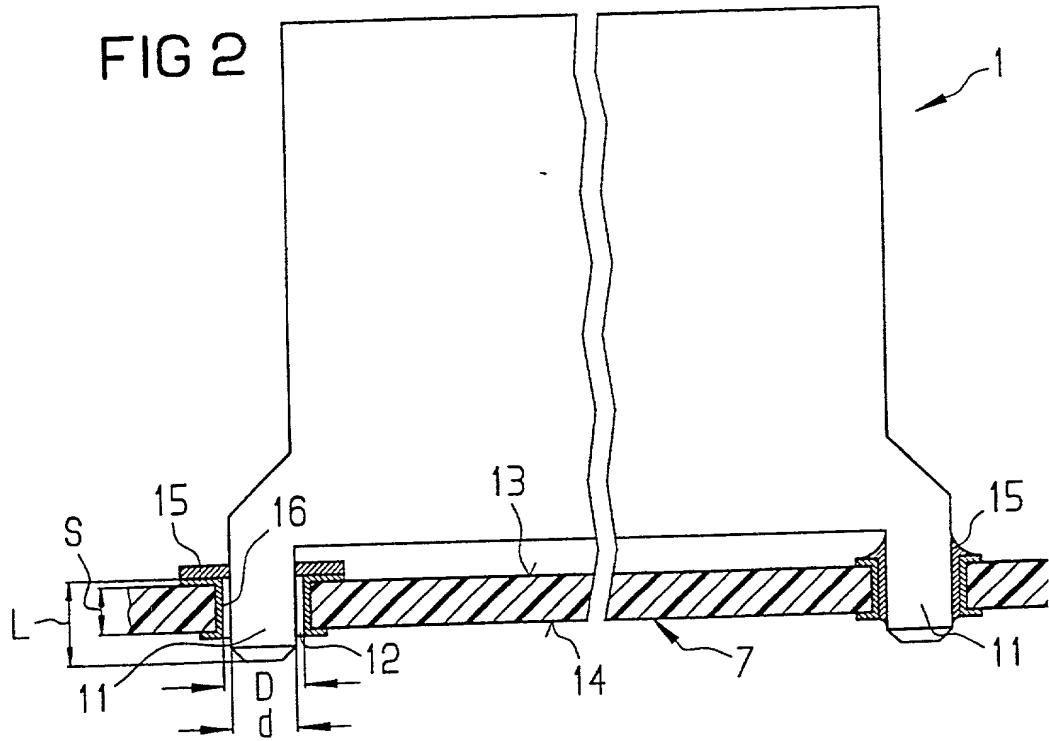
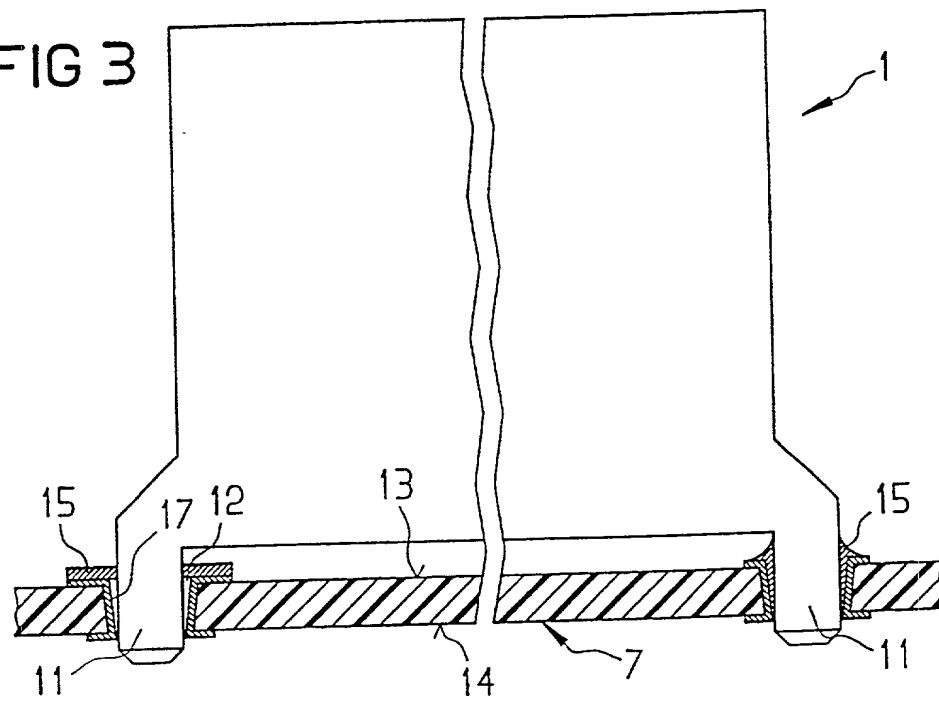


FIG 3



Docket No.
KSN0013

Declaration and Power of Attorney For Patent Application

English Language Declaration

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

**ELECTRICAL COMPONENTS FOR PRINTED BOARDS AND METHOD FOR AUTOMATICALLY
INSERTING SAID COMPONENTS IN PRINTED BOARDS**

the specification of which

(check one)

is attached hereto.

was filed on May 9, 2001 as United States Application No. or PCT International Application Number 09/831,415

and was amended on May 9, 2001 by Preliminary Amendment

(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) or Section 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

Priority Not Claimed

DE 19851868.4 (Number)	Germany (Country)	10 November 1998 (Day/Month/Year Filed)	<input type="checkbox"/>
 (Number)	 (Country)	 (Day/Month/Year Filed)	<input type="checkbox"/>
 (Number)	 (Country)	 (Day/Month/Year Filed)	<input type="checkbox"/>

I hereby claim the benefit under 35 U.S.C. Section 119(e) of any United States provisional application(s) listed below:

(Application Serial No.)

(Filing Date)

(Application Serial No.)

(Filing Date)

(Application Serial No.)

(Filing Date)

I hereby claim the benefit under 35 U. S. C. Section 120 of any United States application(s), or Section 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. Section 112, I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, C. F. R., Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

PCT/DE99/03493

2 November 1999

Pending

(Application Serial No.)

(Filing Date)

(Status)

(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)

(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)

(patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

Eric J. Groen, 32,230

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Daniel Tychonievich, 41,358

Deborah R. Beck, 37,370

Michael D. Beck, 32,722

Kevin R. Erdman, 33,687

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Full name of fifth inventor, if any

Fifth inventor's signature

Date

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Full name of sixth inventor, if any

Sixth inventor's signature

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